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Key Words: hydroxylated polychlorinated biphenyls; BALB/cCrgl mouse; female reproduction; estrogenicity; tumorigenicity.

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ABBREVIATIONS: 17 beta-estradiol (E2), 2’4’6’-trichloro-4-biphenylol (OH-PCB 30), 2’3’4’5’-tetrachloro-4-biphenylol (OH-PCB 61), aryl hydrocarbon receptor (AhR), cervicovaginal (CV), day of vaginal opening (DVO), diethylstilbestrol (DES), estrogen receptor (ER), hydroxylated polychlorinated biphenyls (OH-PCBs), mouse mammary tumor virus (MMTV).

Outline of manuscript section header

ABSTRACT

The neonatal mouse model has been a valuable tool in determining the long-term effects of early exposure to estrogenic agents in mammals. Using this model, we compared the effects of 2'4'6'-trichloro-4-biphenylol (OH-PCB 30) and 2'3'4'5'-tetrachloro-4-biphenylol (OH-PCB 61) as prototype estrogenic hydroxylated PCBs (OH-PCBs) since they are reported to exhibit relatively high estrogenic activity both *in vivo* and *in vitro*. The purpose of this study was to examine the relationship between estrogenicity and carcinogenicity of OH-PCB congeners. The OH-PCBs were tested individually and in combination to determine whether effects of combined OH-PCBs differed from those of these OH-PCBs alone. We evaluated the long-term effects of neonatal exposure to OH-PCBs with treatment doses that were based on the reported binding affinity of specific OH-PCB congeners to the estrogen receptor alpha. BALB/cCrgl female mice were treated within 16 hr after birth by subcutaneous injections every 24 hr, for 5 days. The OH-PCB 30 [200 μg/day] or 17 beta-estradiol (5 μg/day) showed similar increased incidences of cervicovaginal (CV) tract carcinomas (43 % and 47 %, respectively). In addition, when mice were treated with OH-PCBs as a mixture, a change in the type of CV tract tumor was observed, shifting from predominantly squamous cell carcinomas to adenosquamous cell carcinoma. From our results, we concluded that the individual OH-PCBs tested were estrogenic and tumorigenic in mice when exposed during development of the reproductive tract. These data support the hypothesis that mixtures may act differently and unexpectedly than as individual compounds.